

A New Urban Ecology

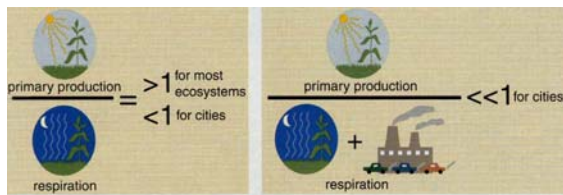
Modeling human communities as integral parts of ecosystem poses special problems for the development and testing of ecological theory.

James P. Collins, Ann Kinzig, Nancy B Grimm, William F. Fagen, Diane hope, Jianguo Wu and Elizabeth T. Borer
 LTER: Long-Term Ecological Research Project

Urban Ecosystems are Dependent

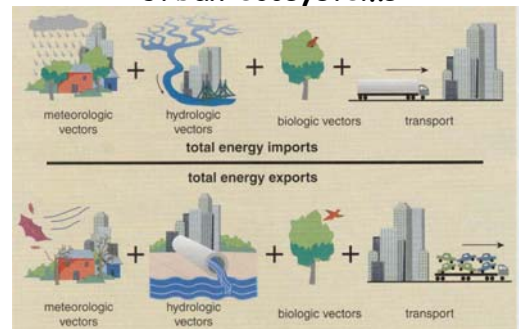
- The ratio of production to consumption is less than 1 (Cities, like people, are consumers)
- A city is a heterotrophic system, relying mostly on external sources of energy

Urban ecosystems



Source: Collings et al. 2000. American Scientist

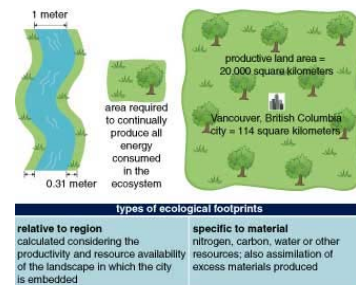
Urban ecosystems



Source: Collings et al. 2000. American Scientist

A. The Urban Footprint (Ecological Footprint): “the footprint of a city is the total area of productive land required to support its activities in a sustainable way.”

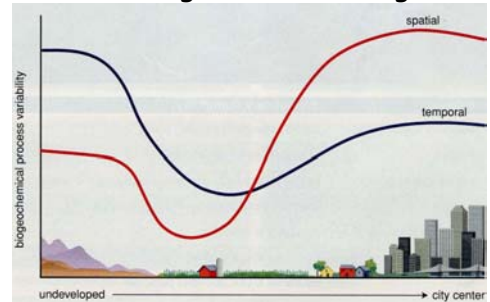
Ecological footprints



Source: Collings et al. 2000. American Scientist

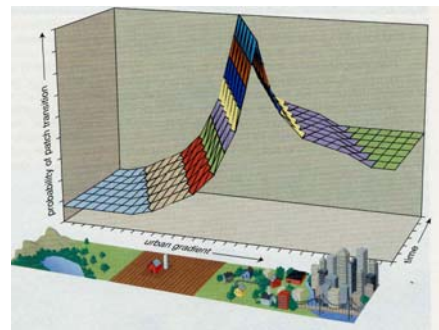
Variability of Urban Ecology in Space and Time (Arid and Semi-arid cities)

Variability in biogeochemical processes along a rural-urban gradient



Source: Collings et al. 2000. American Scientist

Urban Ecosystems are Dynamic and Changing



Source: Collings et al. 2000. American Scientist

Stretching current ecological theory (qualitative) to include urban ecosystems: “Perhaps the tools already developed for understanding the emergence of different life-history strategies can be extended...to people”